



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,982	02/25/2004	Shigeru Yao	054160-5012-03	8957
9629	7590	06/06/2006	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			VO, HAI	
			ART UNIT	PAPER NUMBER
			1771	

DATE MAILED: 06/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/784,982

Applicant(s)

YAO ET AL.

Examiner

Hai Vo

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

Art Unit: 1771

1. The 102/103 art rejections based on Tomioka et al (US 5,510,395) are withdrawn and changed to the 103 are rejections over Tomioka et al (US 5,510,395) in view of Adamopoulos et al (US 5,326,643). The final product of Tomioka does not have a metal layer as pointed out by Applicants at page 5 of the 03/17/2006 amendment.
2. The art rejections over O'Neill et al (US 6,187,248) in view of Adamopoulos et al (US 5,326,643) are maintained.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 15-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomioka et al (US 5,510,395) in view of Adamopoulos et al (US 5,326,643).

Tomioka teaches the porous film having a porosity of 2% to 70%, a thickness from 5 to 100 microns, a dielectric constant of 2.3 and a pore size of 0.05 to 5 microns within the claimed ranges (column 10, lines 1, and 30-33, table 2, example 9).

Tomioka teaches the porous film made from a film casting method. Additionally, Tomioka discloses that the porous film can be used as a gas separation film or a liquid separation film (column 10, lines 15-17). Likewise, the continuous pore structure should be inherently present for success filtration. Tomioka does not

specifically disclose the heat shrinkage, gas permeability. Tomioka discloses the film having a gas permeability from 0.1 to 0.7 cm³/cm².sec.cmHg (column 10, lines 15-17). Tomioka teaches a porous film comprised of a polyimide having a formula as shown at column 5, lines 50-60. The formula indicates that the polyimide resin film obtained from the combination of biphenyltetracarboxylic dianhydride component and a diaminodiphenylether component. However, it appears that Tomioka uses the same casting technique to form the porous film which has the thickness, void volume, dielectric constant and pore size within the claimed ranges. The porous film of Tomioka is found useful as a dielectric layer for semiconductor devices as the porous film of the present invention. Hence, it is not seen that the porous film could have the heat shrinkage, gas permeability different from that of the present invention so as to achieve all listed physical characteristics and to be suitable as the dielectric layer for semiconductor devices. Accordingly, the heat shrinkage, and gas permeability would be inherently present. Tomioka does not specifically disclose the substrate is laminated on an opposite side of the porous film from the metal layer. Adamopoulos, however, discloses a semiconductor device comprising a laminate of a metal layer, a dielectric polyimide layer and a substrate together bonded to each other via an adhesive layer (abstract, figure 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the multilayer article with a layer construction as described by Adamopoulos because such is obvious and known in the semiconductor art and Adamopoulos provides necessary details to practice the invention of Tomioka.

This application is a divisional application of 09/539,939, filed 03/31/2000 now abandoned. The examiner is aware that the declaration signed by Yoshihiro Kusuki was filed on 09/30/2003 during the prosecution of the application of 09/539,939 to overcome the art rejections over Tomioka et al (US 5,510,395). The declaration provides the sectional SEM images to demonstrate that the elliptic pores in Tomioka film were found to exist independently one by one (figures 1 and 2). Further, there are no open pores on the surface of the film (figures 3 and 4). In addition, Mr. Yoshihiro Kusuki prepared the film in accordance with the procedure disclosed in Tomioka and he found that the porous film is unable to attain the resistance to passage of air within the claimed range. Since the declaration is not transferred over in the continuation of application, it is suggested that the copies of the declaration and SEM images should be resubmitted and the special features associated with the SEM images must be incorporated in claim 1 in order to exclude Tomioka as a qualified prior art.

5. Claims 15-29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill et al (US 6,187,248) in view of Adamopoulos et al (US 5,326,643) substantially as set forth in the 10/17/2005 Office Action.
6. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill et al (US 6,187,248) in view of Adamopoulos et al (US 5,326,643) as applied to claim 15 above, further in view of Jasne et al (US 5,153,303) substantially as set forth in the 10/17/2005 Office Action.

The art rejections based on O'Neill et al (US 6,187,248) have been maintained for the following reasons. Applicants argue that O'Neill does not teach a pore size of 0.05 to 5 microns. The examiner respectfully disagrees. While it is true that O'Neill is intended to prepare the porous insulating film with a pore size of less than 30 nm, O'Neill mentions that a porous polyimide film could be made with a pore size in the range of 1 micron (column 12, lines 35-40). O'Neill discloses that a porous polyimide film having a pore size greater than 50 nm (column 15, lines 60-63). It is noted that O'Neill discloses two processes of making a porous insulating film, one with a dense layer on at least one of its surfaces and one without a dense layer (abstract, column 12, lines 15-18 and lines 35-40). These two processes are basically the same as the second and third methods as disclosed in the present specification. Accordingly, the art rejections are sustained.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 1771

8. Claims 15-31 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 15-27 of U.S. Patent Application No. 10/785,413 in view of Adamopoulos et al (US 5,326,643) substantially as set forth in the 10/17/2005 Office Action. The obviousness-type double patenting will not be withdrawn until the submission of a terminal disclaimer.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on Monday through Thursday, from 9:00 to 6:00.

Art Unit: 1771

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hai Vo

HV

**HAI VO
PRIMARY EXAMINER**